Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
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Service Rules for the 698-746, 747-762 and 777-792 MHz Bands	)	WT Docket No. 06-150
	)	
	)	
Implementing a Nationwide, Broad-band, Interoperable Public Safety Network in the 700 MHz Band	)	PS Docket No. 06-229
	)	

COMMENTS

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SUMMARY

In 08-128 the Commission asked for options to the 700 MHz D Block Public/Private Partnership Model. This filing considers that question and offers priority wireless broadband access on commercial networks as an alternative that deserves analysis, particularly in light of the global effort by the cellular industry to develop the specifications for such an approach. In the wireline network we do *not* build separate physical wireline networks for public safety, government agencies, etc. Some of these networks meet reliability standards well beyond that of public safety agencies (e.g. the Federal Reserve Network, some military networks). So the key question is: can the coming generation of wireless broadband networks meet the coverage, reliability and features and functions needed by public safety more cost effectively than other alternatives such as a dedicated broadband network for public safety? If so what are the incentives necessary for the commercial cellular industry to offer the needed services, features and functions? This filing starts the dialog needed to address these questions.

COMMENTS

In the *Second Further Notice of Proposed Rulemaking, FCC 08-128,* the Commission invites comments on additional options that might be taken to ensure the development and deployment of a nationwide interoperable broadband network for public safety. In particular the FCC asked for options in case the 700 MHz D Block Public/Private Partnership Model failed again in the auction. The Commission is to be commended for broadening the inquiry. In order to achieve the end goal of a modern interoperable voice, data, and video for public safety communications, the Commission should take a modern layered "network of networks" approach to communications. As stated in the Aspen Institute Report, *Clearing the Air: Convergence and the Safety Enterprise*[1]

> "In particular, the public safety community should migrate away from its traditional reliance on specialized equipment and embrace an integrated broadband infrastructure that will leverage technological innovations routinely being used in commercial sectors and the military. Notably, by recognizing the power of Internet Protocol (IP) technology—regularly used by large, medium, and small enterprises to enable their businesses to work effectively—public safety agencies can unite disparate users, adopt enhanced and secure applications that use open standards, and facilitate interoperability through a "network of networks" strategy."

The public safety community critically needs wireless broadband access *service* as one part of the "network of networks" solution, *not necessarily* a single wireless broadband interoperable network. In fact a single wireless broadband network will not solve the interoperability problems at level of services and applications as explained in the Aspen paper referenced above. On the other hand the ability of public safety officers to obtain network access anywhere in the country does *not* require a single network but just a single network access standard. In fact mul-

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[1] *Clearing the Air: Convergence and the Safety Enterprise,* Phillip J. Weiser, Rapporteur, August 2006, Apen Institute,

tiple mode devices can even access multiple network access standards. For broadband wireless, the commitment of both Verizon and ATT to the 3GPP LTE/SAE network standard for the next generation wireless technology means there will be widespread availability of a common wireless broadband interface in the future so nationwide access may be close to a reality via different networks.

Today public safety agencies do not build and maintain their own wireline network for voice and data communications but rather obtain wireline *services* from wireline network operators. Given the advances in cellular network capabilities, the question must be asked if the wireline model should now apply to wireless broadband communications.

The public safety community can obtain wireless broadband access via three different means:

1. Public Safey/ D Block Partnership Model, the current focus of FCC 08-128
2. A Dedicated 700 MHz Network using the Public Safety 700 MHz Spectrum
3. Priority Broadband Wireless Public Safety Service on Commercial Cellular Broadband Wireless Networks.

The *Second Report and Order* focuses predominantly on the many questions that must be addressed if the first approach above is to attract a successful bidder and ultimately lead to a successful network deployment. Re the second approach Verizon and others have documented that substantive public funding well in excess of $10 B will be needed to built a separate network for public safety, a daunting task. This filing focuses on why the third approach, priority access on the emerging cellular wireless broadband networks, deserves serious consideration and analysis

by the Commission. This third approach can have the following advantages for the public safety community and tax paying Americans:

1. Earliest availability of service for the public safety community by capitalizing on the broadband 3.5 G and 4G networks deployed by cellular commercial operators
2. Least additional capex needed to meet the need for nationwide public safety broadband wireless access since the cellular industry is or soon will be offering such service to 90% of all Americans
3. Best ability to leverage the on-going innovations in the commercial sector.

In addressing the public safety community's need for future communications services, note that today Public safety agencies use private land mobile radio systems for mission critical voice communications. Most public safety officers use commercial cellular phones for non-mission critical communications. So in the near term, voice communications is not the missing unfilled need although more capacity may be needed. And gateways may be needed for interoperability. Note that this type of interoperability among legacy systems is *not* a spectrum issues but rather a logical issue that can be solved in that domain. What public safety agencies do *not* have generally is wireless broadband access to IP based data communications applications and video services. On the other hand commercial cellular broadband wireless services, for example HSPA or EVDO as offered by ATT or Verizon, do provide is wireless broadband access to IP based services, the basic underlying transport capability. So the question is what additional capabilities are needed for these networks to meet the public safety communities needs. Three areas that must be addressed:

1. Additional features and functions needed by public safety such as rigorous preemption and priority, security, command and control configurability, etc.

2. Reliability, robustness, and availability to meet public safety standards.
3. Coverage. Cellular networks today fall far short of public safety network coverage.

Re the first area above, in reality most of these features are also needed by demanding enterprise users. There may be a small set of additional features needed by the public safety community. In fact efforts are underway in the ITU (Internation Telecommunications Union) and the 3GPP industry group (the group that sets the specifications for the dominant global cellular ecosystem today) to add to the next generation cellular standards any specific additional features also needed by the public safety community. ATT, Verizon, and almost all of the other U.S. cellular players are now committed to the 3GPP ecosystem for their next generation cellular networks and in particular to a migration to LTE for "4G". So the U.S. public safety community under a priority broadband wireless model may have the opportunity to benefit from the global ecosystem and hence much lower cost devices and technology that will be available through the 3GPP ecosystem that will serve billions of customer worldwide while still obtaining the specialized features and functions needed.

In terms of robustness and reliability, cellular networks in urban and suburban areas may be approaching or possibly surpassing PS narrowband trunked performance given that in many areas a user may have access to multiple cell sites from a single location. Access to multiple sites typically provides greater reliability than access to one "hardened sites" that is a single point of failure. In other areas cellular networks may need to be "reinforced or hardened" to

meet public safety reliability standards. This is a knowable costs and likely much smaller than deploying a new network throughout a geographic areas..

So coverage is the key issue. One or more of the following three options could be used to solve the substantive coverage gap:

1. Build a "thin overlay" 700 MHz network in uncovered areas using the public safety broadband network and extended range cells.
2. Use a complementary satellite network as a "universal backstop" network of last resort.
3. Incent cellular providers to supplement the current cellular networks by building out in unserved areas.

Addressing the third alternative could also bring the benefits of advanced cellular networks to rural and underserved America. Steps the Commission could consider to make this alternative viable could include:

1. Auctioning the D Block spectrum in EAs or CMAs with the condition that operators must also provide priority broadband wireless service to public safety in *any* of the spectrum in which they build advanced cellular networks.
2. Allowing public safety through the RPCs or similar locally oriented agents to lease public safety broadband spectrum in particular geographic areas to cellular operators for combined commercial and public safety priority access. This approach could also provide public safety agencies with a source of funds to purchase priority wireless broadband services and keep their own communications costs lower

3. For those areas where there are no commercial operators willing to offer advanced wireless services including priority access for public safety, use "Universal Service Funding" to incent new build.

All of the ideas above are preliminary ideas. Careful scrutiny and analysis in needed to determine viability. The author puts these ideas forth in order to further the dialog requested by the Commission in Section C of *Second Further Proposed Notice of Rulemaking, 08-128*.